UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/628,694	07/28/2000	Michael Boucher	06502.0230	3427

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EXAMINER
GROSS, KENNETH A

ART UNIT	PAPER NUMBER
2122	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	Applicant(s)
Office Action Summary	09/628,694	BOUCHER, MICHAEL
	Examiner	Art Unit
	Kenneth A Gross	2122

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>17 June 2003</u> .

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-5,10,14-19,21-23,26-28,35-39,44-48 and 51-53</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-5,10,14-19,21-23,26-28,35-39,44-48 and 51-53</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)   4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5)☐ Notice of Informal Patent Application (PTO-152)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2-7,9,10</u> .   6)☐ Other: .

DETAILED ACTION

1.   This action is in response to the office action filed on June 17th, 2003.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

2.   Claims 1, 2-5, 10, 23, 26, 27, and 35-39 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Donovan et al. (U.S. Patent Number 6,072,951) in view of Reeve et al. (U.S.

Patent Number 5,535,393).

In regard to Claim 1, Donovan teaches: (a) identifying a subprogram of a computer

program (Column 1, lines 59-65); (b) selectively inlining computer code of certain execution

paths of the subprogram (Column 2, lines 56-61) based on a directive (Column 6, lines 36-39).

Donovan does not teach that these directives are included as part of a program comment

statement associated with an execution path. Reeve, however, does teach embedding directives

in a program comment statement (Column 7, lines 21-27). Therefore it would have been obvious

to one of ordinary skill in the art at the time of the invention to identify a subprogram of a

computer program and selectively inline computer code of certain execution paths of the

subprogram based on a directive, as taught by Donovan, where the directive is embedded in a

program comment statement, as taught by Reeve, since this allows certain compilers to recognize

the commands, and other compilers to ignore them. Claims 10 and 35 correspond directly with Claim 1 and are rejected for the same reasons as Claim 1.

In regard to Claims 2-5, for specific rejections of these Claims, see the office action mailed on April 11th, 2003. Claims 36-39 correspond directly with Claims 2-5, respectively, and are rejected for the same reasons as Claims 2-5, respectively.

In regard to Claim 23, Donovan teaches: (a) identifying a subprogram (Column 1, lines 59-65) that has a plurality of execution characteristics. Donovan teaches gathering execution frequencies for a multiple number of paths in a procedure (Column 6, lines 25-30). Each frequency for a given path can be seen as an execution characteristic; (b) inlining only a selected portion of the subprogram that corresponds to the execution characteristics. Donovan teaches that the portions of the subprogram that are executed most frequently are those that are inlined (Column 3, lines 4-6). Donovan does not teach that the selected path is determined by identifying a non-executable statement configured to direct the computer to interpret at least a portion of the non-executable statement as a special directive. Reeve, however, does teach embedding directives in a program comment statement (Column 7, lines 21-27). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to identify a subprogram of a computer program and selectively inline computer code of certain execution paths of the subprogram based on a directive, as taught by Donovan, where the selected path is determined by identifying a non-executable statement configured to direct the computer to interpret at least a portion of the non-executable statement as a special directive, as taught by Reeve, since this allows certain compilers to recognize the directives, and other compilers to ignore them.

In regard to Claim 26, Donovan teaches putting directives in code at selected paths (Column 6, lines 36-39). Therefore it would be obvious to place the comments with embedded directives in the code at selected paths as well.

In regard to Claim 27, for a specific rejection of this claim, see the office action mailed on April 11th, 2003).

3.   Claims 14-19, 28, 44-48, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Donovan et al. (U.S. Patent Number 6,072,951).

In regard to Claim 14, Donovan teaches: (a) identifying a subprogram with first and second execution characteristic. Donovan teaches gathering execution frequencies for a multiple number of paths in a procedure (Column 6, lines 25-30). Each frequency for a given path can be seen as an execution characteristic, and hence the subprogram can have two characteristics; (b) replacing a portion of the subprogram that exhibits the first execution characteristic with program instructions that explicitly define the operations of the first execution characteristic (Column 3, lines 4-6); and (c) leaving intact a second portion of the subprogram that exhibits the second execution characteristic. This is inherent from Donovan, since code that doesn't have a certain execution frequency is not inlined, and hence is left intact. Donovan does not explicitly teach that the first and second execution characteristics are based on arguments operated on by the subprogram, however it is obvious that the frequency of execution of paths in a program would be altered and thus would be based on arguments operated on by a subprogram. For example, programs can reach conditional statements, and the path that the program takes will be based on the value of the argument fulfilling the conditional expression. This view is supported in the Background section of the current application (Page 2, lines 16-22). Therefore it would

have been obvious to one of ordinary skill in the art at the time of the invention to identify a

subprogram with first and second execution characteristic, replace a portion of the subprogram

that exhibits the first execution characteristic with program instructions that explicitly define the

operations of the first execution characteristic, and leave intact a second portion of the

subprogram that exhibits the second execution characteristic, as taught by Donovan, where the

first and second execution characteristics are based on arguments operated on by the

subprogram, since the frequencies of program paths are obviously altered by arguments of the

program. Claim 44 corresponds directly with Claim 14 and is rejected for the same reasons as

Claim 14.

In regard to Claim 15, Donovan teaches that the number of statements of a path of the

subprogram can also be used as an execution characteristic for a number of portions of the

subprogram (Column 9, lines 52-58). Donovan teaches that if this characteristic falls below a

given threshold (the code has too many statements), then the code is inlined, and hence requires

special processing to inline the program.

In regard to Claims 16 and 17, for specific rejection of these Claims, see the office action

mailed on April 11th, 2003.

In regard to Claim 18, Donovan teaches that if a characteristic exceeds a threshold (the

code has too many statements), then the code is not inlined, and hence the portion of code is left

intact, and no special processing is performed on the code.

In regard to Claim 19, for a specific rejection of this Claim, see the office action mailed

on April 11th, 2003.

In regard to Claims 45-48, Claims 45-48 correspond directly with Claims 15-18, and are rejected for the same reasons as Claims 15-18, respectively.

In regard to Claim 28, Donovan teaches identifying a subprogram that operates in a first manner and in a second manner and replacing subprogram statements that cause the subprogram to operate in the first manner with expanded code. Donovan teaches that execution frequencies are gathered for each path in the subprogram (Column 2, lines 66-67 and Column 3, line 1). Donovan teaches that when the execution frequency of a certain path exceeds a threshold, the program is inlined. Donovan does not explicitly teach that the first and second manners of operation occur when operands passed to the subprogram fall within two value ranges. However, it is obvious that the frequency of execution of paths in a program would be altered and thus would be based on arguments operated on by a subprogram. For example, programs can reach conditional statements, and the path that the program takes will be based on the value of the argument fulfilling the conditional expression. This view is supported in the Background section of the current application (Page 2, lines 16-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to identify a subprogram that operates in a first manner and in a second manner and replacing subprogram statements that cause the subprogram to operate in the first manner with expanded code, as taught by Donovan, since the frequencies of program paths are obviously altered by arguments of the program. Claim 53 corresponds directly with Claim 28 and is rejected for the same reasons as Claim 28.

4.   Claims 21, 22, 51, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Donovan et al. (U.S. Patent Number 6,072,951) in view of Lanning (U.S. Patent Number 5,787,285).

For specific rejections of Claims 21 and 22, please see the office action mailed on April 11th, 2003 (Note: Claims 21 and 22 have been amended, however, the scope of the claims have not changed). Claims 51 and 52 correspond directly with Claims 21 and 22, respectively, and are rejected for the same reasons as Claims 21 and 22 respectively.

Response to Arguments

5.   Applicant's arguments with respect to claims 1, 10, 23, and 35 have been considered but are moot in view of the new ground(s) of rejection. Specifically, references have been provided which show that embedding a directive in a non-executable program comment statement is prior art.

Applicant's arguments with respect to claims 14, 28, 44, and 53 have been considered but are moot in view of the new ground(s) of rejection. Specifically, it was shown that it is obvious for a first and second execution characteristic of a program to be based on arguments operated on by a subprogram of the program.

Conclusion

6.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Kenneth A Gross whose telephone number is (703) 305-0542.

The examiner can normally be reached on Mon-Fri 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Tuan Q Dam can be reached on (703) 305-4552. The fax phone number for the

organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (703) 305-3900.

TUAN DAM
KAG
SUPERVISORY PATENT EXAMINER